

**REMARKS**

In the current Office Action following the reopening of prosecution, the Examiner objected to claim 5 to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Applicants appreciate the indication of allowable subject matter.

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In view of the Examiner's concerns and to recite features of an exemplary embodiment in a different fashion, new claims 8-10 are presented herein and claims 4-7 cancelled herein without prejudice or disclaimer.

Support for new claims 8-10 is found, for example, in paragraph [0012] of the specification.

No new matter is presented and entry and approval are requested.

Thus, claims 8-10 are pending and consideration is requested.

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New independent claim 8 recites a nonlinear precoding method based on modulo arithmetic for the transmit-side preequalization of  $K$  user signals to be transmitted in a digital broadcast channel with known transmission channel matrix  $H$  set up between a central transmitting station and  $K$  decentralized, non-interconnected receiving stations, the user signals consisting of data symbols  $a_k$  with  $k$  from 1 to  $K$  from a signal constellation having  $M_k$  levels and a signal point spacing  $A_k$  with a periodic multiple representation of the undisturbedly-transmitted data symbols  $a_k$  in data symbol intervals congruent for  $K$  receive-side modulo-decision devices, a transmit-power-minimizing selection of representatives  $v_k$  from the range of values  $a_k + A_k \cdot M_k \cdot z_{kk}$ , where  $z_{kk}$  is from the set of positive or negative integers including zero, and linear preequalization of the selected representatives  $v_k$  to form transmit signals  $x_k$  to be transmitted, including "applying the nonlinear precoding method only to a reduced channel matrix  $H_{red}$  that is calculated from the equation  $H = H_{red} R$ , whereby  $H$  is the known channel matrix and  $R$  is a residual interference matrix  $R$ , whose interference elements are chosen to assume the range of values  $A_k \cdot M_k \cdot z_{kl}$ , where  $z_{kl}$  is from the set of positive or negative integers including zero."

According to an exemplary embodiment, as recited by claims 8-10, there is no complete crosstalk cancelation, but a partial precoding at the transmitter side that leaves residual (remaining) interference signals at the receiver side.

Moreover, the partial precoding according to an exemplary embodiment is arranged (via a particularly permitted residual interference, described by the interference matrix  $R$ ) such that the residual interference at the receiver side does not adversely affect independent decision making in the (independent) receivers. (See, for example, paragraph [0015] of the specification).

\*       \*

Applicants submit that claims 8-10 patentably distinguish over the current art of record.

In item 3 of the Office Action, the Examiner rejected claims 4, 6-7 (all cancelled herein) under 35 U.S.C. §103(a) as being unpatentable over Fischer et al, "Space-Time Transmission using Tomlinson-Harashima Precoding" Proceedings of 4<sup>th</sup> International ITG Conference on Source and Channel Coding, January 2002, pp. 139-147 ("Fisher") in view of Ginis et al, "A Multi-user Precoding Scheme achieving Crosstalk Cancellation with Application to DSL Systems," IEEE document, 2000, pp 1627-1631 ("Ginis").

By contrast with claims 8-10, Ginis merely teaches a TH-precoder method capable of achieving crosstalk cancellation (See, for example, abstract).

Ginis extends the TH-method to the "space" dimension, i.e. to a MIMO-channel (See, for example, page 1628, left column, last paragraph).

Applicants submit that the teachings of Ginis merely correspond to the publication IV of R. Fischer et al.: "MIMO-Precoding for Decentralized Receivers" (Proceedings of International Symposium on Information Theory - ISIT 02, Lausanne, Switzerland, June/July 2002, p. 496) that was cited as prior art by the subject application.

Nothing in the teaching of Fischer overcomes the deficiencies of Ginis.

Thus, Applicants submit that a finding of *prima facie* obviousness in view of the current art of record would be in error.

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Thus, Applicants submit that claims 8-10 should be allowed.

### **Conclusion**

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

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If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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